Claims

1. The method for sterilizing materials comprising the steps of:

(a) providing a multi-channel linear induction accelerator system having an output of select electron beam energy and direction;

(b) providing an output assembly coupled in vacuum secure relationship with said linear induction accelerator system for transferring said output of select energy therefrom in a predetermined direction;

(c) manipulating said output from said output assembly to distribute it over a treatment region of controlled extent and with a distribution of output energy effective to non-destructively sterilize said material; and

(d) transporting said material through said treatment region.

2. The method of claim 1 in which:

said step (a) provides said multi-channel linear induction accelerator system as having a single channel with said output being present as a single beam; and

said step (c) manipulates said single beam by magnetically causing it to successively sweep across said treatment region.

3. The method of claim 2 in which said step (c) manipulates said output to provide a hard X-ray output.

4. The method of claim 1 in which:

said step (a) provides said multi-channel linear inductor accelerator system as having more than one channel, each providing a channel-designated discrete said output; and

said step (c) manipulates each said channel-designated output by magnetically causing it to sweep across that said treatment region associated with said channel-designated output.

5. The method of claim 4 in which said step (c) manipulates at least one said channel-designated output to provide a hard X-ray output.

6. The method of claim 1 in which:

said step (a) provides said multi-channel linear accelerator induction system as having more than one channel, each providing a channel-designated discrete said output; and

said step (c) manipulates each said channel-designated output by defocusing it to derive an expanded channel-designated output at said treatment region in a manner wherein said channel-designated outputs of adjacent said channels are caused to overlap and mutually extend over said treatment region.

7. The method of claim 6 in which said step (c) manipulates at least one said channel-designated output to provide a hard X-ray output.

8. The method of claim 6 in which:

said step (c) manipulates each said channel-designated output by azimuthally-symmetrically defocusing it.

9. The method of claim 6 in which:

said step (c) manipulates each said channel-designated output by azimuthally-asymmetrically defocusing it.

10. The method of claim 1 in which:

said step (a) provides said multi-channel linear induction accelerator system as having more than one channel, each said channel providing a channel-designated discrete said output having a said select direction which is generally horizontal; and

said step (b) provides said output assembly as transferring said output in a said predetermined direction which is generally horizontal.

11. The method of claim 10 in which said step (c) manipulates at least one said channel-designated output to provide a hard X-ray output.

12. The method of claim 10 in which said step (c) manipulates each said channel-designated output by defocusing it to derive an expanded channel-designated output at said treatment region in a manner wherein said channel-designated output of adjacent said channels are caused to overlap and mutually extend over said treatment region.

13. The method of claim 12 in which:

said step (c) manipulates each said channel-designated output by azimuthally-symmetrically defocusing it.

14. The method of claim 12 in which:

said step (c) manipulates each said channel-designated output by azimuthally-asymmetrically defocusing it.

15. The method of claim 1 in which:

said step (a) provides said multi-channel linear induction accelerator system as having more than one channel, each said channel providing a channel-designated discrete said output having a said select direction which is generally horizontal;

said step (b) provides said output assembly with a said predetermined direction which is generally horizontal; and

said step (d) transports said material generally vertically through said treatment region.

16. The method of claim 15 in which said step (c) manipulates at least one said channel-designated output to provide a hard X-ray output.

17. The method of claim 15 in which said step (c) manipulates each said channel-designated output by defocusing it to derive an expanded channel-designated output at said treatment region in a manner wherein said channel-designated outputs of adjacent said channels are caused to overlap and mutually extend over said treatment region.

18. The method of claim 17 in which:

said step (c) manipulates each said channel-designated output by azimuthally-symmetrically defocusing it.

19. The method of claim 17 in which:

said step (c) manipulates each said channel-designated output by azimuthally-asymmetrically defocusing it.